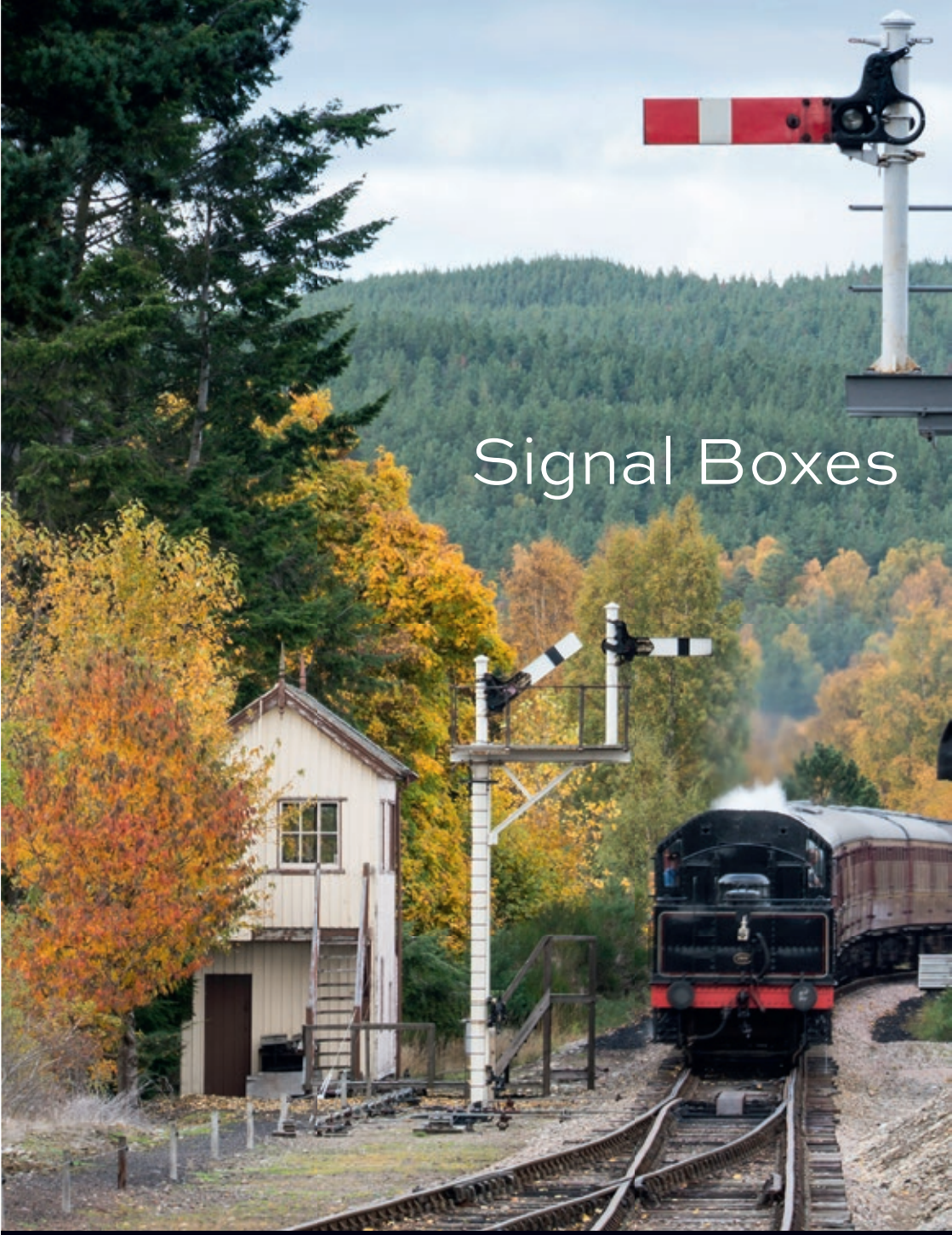


Signal Boxes

Buildings

HISTORIC SCOTLAND
ALBA AOSMHOR

Of all the buildings developed specifically for the railways, the signal box holds a special place as one of the most instantly recognisable and loved. The sight of a signal box can transport us back to the romance of the bygone era of steam travel. Located at the trackside, they are as unmistakable in the landscape as lighthouses or red telephone boxes.

As signal boxes come to an end of their functional journey because of changes to signalling technology, it is a good time to take a look at their history and to celebrate some of Scotland's best examples. There are around forty signal boxes recognised through listing in Scotland. These buildings cover all the major surviving Scottish designs and are valued for the contribution they make to our wider railway heritage and history. The signal boxes date from the 1870s right through to the era of post-war nationalisation and the creation of British Rail in the 1950s. Some are special because they are a particularly interesting design or are an exceptionally rare survival of a specific design, others are significant as they form an important part of a group of station buildings.

In recent years, new and imaginative uses have been found for a number of signal boxes including a railway heritage centre, an office, a coffee shop, an artist's studio, a waiting room and a nature observatory. A handful of operational boxes are found on Scotland's preserved railway lines, which are open to the public and managed by enthusiastic and knowledgeable volunteers.

The form of the signal box is very closely linked to its function: through its mechanical equipment it ensures the safe and efficient passage of trains through a station or a railway junction. There are, however, a surprising and

delightful number of variations. Many signal boxes have decorative details not essential to their function and they have highly polished levers, instruments and other surfaces. Some interiors have been immaculately maintained by long-serving signalmen. On quieter railway lines some look like miniature libraries with shelves of books to help while away the solitary time between trains, while others have even doubled as greenhouses with shelves full of seedlings

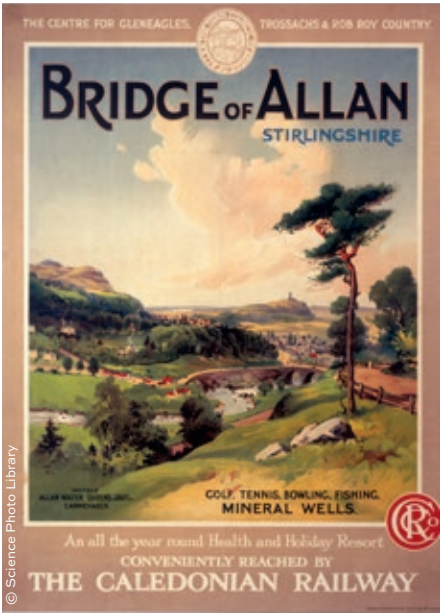
Signal boxes are usually two-level structures with a glazed upper section as the operating floor and a room below which houses the interlocking mechanism, the signal wire wheels and the point drive cranks. The key piece of equipment – the lever frame – works the points on the track where rails intersect, as well as a series of 'stop and go' semaphore or, more recently, coloured light signals to be observed and acted upon by train drivers. The levers are mechanically interlocked against each other to provide safe and seamless operation by the signalman who can also observe the position of the trains through the windows of the signal box. That these buildings have continued to operate, relatively unchanged, for well over one hundred years is testament to the success of the basic design.

above *Semaphore signals beside the Boat of Garten North signal box*

below *Installed in 1891 and set a considerable distance apart, the two timber boxes at Nairn Station on the Moray coast were previously manned by a lone duty signaller based in the station office who cycled between them on a bicycle provided by the rail company.*

opposite *Levers at Stirling Middle signal box*

Ambitious Beginnings


THE CENTRE FOR GLENEAGLES, TROSSACHS & ROB ROY COUNTRY
BRIDGE OF ALLAN
STIRLINGSHIRE
GOLF, TENNIS, BOWLING, FISHING,
MINERAL WELLS
An all the year round Health and Holiday Resort
CONVENIENTLY REACHED BY
THE CALEDONIAN RAILWAY
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From its outset in the 1820s, the public railway network expanded at an incredible pace and by the mid-nineteenth century more than sixty local railway companies had sprung up across Scotland.

These were gradually amalgamated into five main companies that controlled the majority of Scotland's railway network from the 1850s through to 1923. These five companies (and the areas they covered) were the Caledonian Railway (West and Central); the Highland Railway (North of Perth / Inverness); the Glasgow and South Western Railway (South West and Galloway); the Great North of Scotland Railway (Aberdeenshire and Moray Coast); and the North British Railway (Tayside, Fife and Borders).

An increasing amount of traffic meant that much more signalling was required to ensure safety. By 1860, advances in mechanical signalling allowed levers to be positioned further away from the trackside and the pointsman's hut was replaced by the signal box as we know it, with timber-boarded sides, deep eaves, hipped roofs and large sliding sash and case windows.

The mechanics of interlocking between points and signals developed briskly. In 1870, James Deakin of Stevens & Son invented the 'tappet' system. The majority of lever frames that survive in Scotland are made by this company and make use of this system. Remarkably, by the end of the Second World War there were more than two thousand signal boxes in operation at stations, halts and junctions across Scotland.

Box Designs

While the five main Scottish rail companies had a range of signal box designs of their own, they also made use of tried and tested designs by leading signalling manufacturers of the day such as Stevens & Sons and McKenzie & Holland. The various box designs, or types (as they are known), could be tailored in height, length and in various other ways to suit their location.

Dutton & Company, for example, were well-known contractors supplying innovative and attractive buildings to the railway companies. This firm was contracted by the Highland Railway to build all the signal boxes between Invergordon and Georgemas in Caithness. Examples of this early design can still be found at Helmsdale and Rogart. A feature of the Dutton box is the decorative moulding in the gables, distinguishing them from the similar McKenzie & Holland boxes which were used at stations further south on the Highland Railway including Boat of Garten North and Aviemore.

The North British Railway company designed signal boxes in-house to complement stations built in 1894 on the famous West Highland line by James Miller, a renowned Glasgow architect who specialised in railway stations. Some of these signal boxes were physically joined by a linking wall to the station buildings, which were designed in a Swiss Chalet style. Important examples can be found at Bridge of Orchy, Garelochhead, Rannoch and Tyndrum stations. With shallow hipped roofs and deep-bracketed eaves, the simple, single storey form of these signal boxes makes them look rather like waiting rooms and indeed some are now used for that purpose.

Each listed signal box has its own story and interest. They are reminders of the golden age of rail travel and contribute to our appreciation and understanding of the history of the railway and its significant place in Scotland's rich heritage.

opposite top *Mid-nineteenth century engraving of a section through a signal box*

opposite bottom *Late nineteenth century Caledonian Railway advertisement*

left *North British Railway signal box beside the station at Upper Tyndrum*

Boat of Garten South

While the former railway line between Aviemore and Forres in the Highlands is no longer part of the National Rail network, the Strathspey Railway run steam trains on the heritage railway line between Aviemore and Broomhill. The intermediate restored station at Boat of Garten retains two fully operational signal boxes. The south box with its panelled brick base and intact interior is a fine example of the Highland Railway design, which became a standard type for that particular railway company. The box to the north of the station, by the McKenzie & Holland company of railway contractors, is illustrated on the front cover of this booklet.

Biggar

Some disused signal boxes have been converted for use as residential 'bolt-holes', summerhouses or, in one case, offices for a local business. Biggar Station was built by the Caledonian Railway company in 1859 and was enlarged in 1906 to coincide with the Royal Highland Show which was held in Peebles that year. A larger signal box was added and, while it no longer retains its internal equipment, it survives in excellent condition externally due to its conversion as an office for a local company. It is one of only four surviving examples of the signature Caledonian Railway company signal box with ornate timber brackets around windows and eaves.

Aberdour

In the 1870s it was agreed that a railway bridge should be built across the Firth of Forth to provide a direct rail service between Edinburgh and the north. The line, built by the North British Railway, hugged the scenic Fife coastline and Aberdour Station, which opened in 1890, became the destination for tourists and day-trippers, who flocked to the picturesque seaside village. Its signal box remained in operation until 1981 when multiple aspect colour light signalling controlled from the new signalling centre in Edinburgh was brought into use. Using the same red sandstone as the Aberdour Station building, it is a rare surviving example of a completely stone-built signal box in Scotland.

top *Stirling middle signal box*

above *Stirling north signal box*

Stirling

The two fine Caledonian Railway company signal boxes at Stirling Station amply illustrate how the number of levers required dictated the length of the building. With a frame of ninety-six levers, Stirling middle signal box has the longest mechanical frame in operation in Scotland (see page 2). The nearby Stirling north signal box has a more than respectable forty-eight levers. At busy times of the day, their locking rooms are a hive of clanking metal with the frames supported in their entirety on massive timber beams. The beams were made deliberately longer than the frame, leaving scope to add more levers if required.

Glenfinnan

Glenfinnan Station has a marvellous grouping of a ticket office and waiting room alongside its signal box. Glenfinnan, part of the West Highland line extension, has been carefully restored and is now operating as a railway museum. The Railway Signal Company was the longest-lived firm of mechanical signalling contractors in the UK. Their West Highland design used here is based on one of their standard signal boxes with the large lower windows omitted, and with deeper eaves and ornate timber brackets to help to protect it from the harsh weather. There is a similar example at Arisaig Station further up the line.

Arbroath

The Arbroath signal box, installed in 1911, is a large and distinctive box by the North British Railway company. It is the only box in Scotland where the operating room sails out on metal supports over a tall and narrow brick base. In the locking room, a succession of wires, chains and pulleys stretch up to the seventy-two lever frame above, like the inside of an upright piano. The arched windows to the base, timber dog-leg access stair and hipped slate roof add to its interest, as does its setting beside a gated level crossing and cast iron lattice pedestrian bridge, forming a striking group.

Edinburgh Waverley West

The signal box at Edinburgh Waverley west dates from 1936. It is a bespoke London and North Eastern Railway design which was modelled specifically for its location beside

East Princes Street Gardens and Waverley Station in the shadow of Edinburgh Castle. While keeping the flat roof of the standard type on which it is based, it modifies the design considerably by using classical architectural details such as roll-mouldings and cill and string courses suitable for its location in the city known as the Athens of the North.

Clachnaharry

Having just three working levers labelled 'up', 'down' (signals) and 'bridge locks', the small box at Clachnaharry, built for the Highland Railway, dates from 1890. Located on the outskirts of Inverness, it sits beside the swing bridge at the mouth of the Caledonian Canal where it joins the Beauly Firth. The strong relationship between the swing bridge, the historic canal and the railway distinguishes this signal box (manufactured by McKenzie & Holland) as an example of its type in a particularly scenic setting.

In 2013/14 Historic Scotland worked with Network Rail to review Scotland's signal boxes as their functional role in railway use draws to a close. The review has ensured that the best examples of signal boxes have been recognised through listing with examples dating from the late nineteenth century through to the era of the post-war nationalisation of the railways. This booklet provides a glimpse of their special interest, their history and the way of life associated with signal boxes.

Further Reading

The Signalling Study Group, *The Signal Box – A Pictorial History And Guide To Designs,* 1986

Peter Kay, *Signalling Atlas and Signal Box Directory*, 3rd edition, 2010

Signalling Record Society, *Signal Box Register,* Volume 6: Scotland, 2012

English Heritage, *Research Report Series No. 28, Railway Signal Boxes – A Review,* 2012 (http://services.english-heritage.org.uk/ResearchReportsPdfs/028-2012WEB.pdf)

www.signalbox.org

Front cover illustration: 'Ivatt' steam engine passing Boat Of Garten north signal box, Strathspey Railway. Above: The Jacobite steam engine crossing the majestic Glenfinnan Viaduct on the West Highland line © Ross Graham /Scottish Viewpoint. Text written by Laurence Parkerson. Designed by Dalrymple. Printed by Butler, Tanner & Dennis.

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HISTORIC SCOTLAND
ALBA AOSMHOR

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